IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In reapplication of	:	Customer Number: 46321
Karns	:	Confirmation No.: 8692
Application No. 10/712,445	:	Group Art Unit: 2626
Filed: 11-13-03	:	Examiner: Joel Stoffregen

For: PHONETIC COVERAGE INTERACTIVE TOOL

APPEAL BRIEF

Mail Stop Appeal Brief – Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Appeal Brief is submitted in support of the Notice of Appeal filed 12-26-07, wherein Appellant appeals from the Examiner's rejection of claims 1-20.

I. REAL PARTY IN INTEREST

This application is assigned to International Business Machines, Corp. by assignment recorded on 11-12-2003 at Reel 014704, Frame 0533.

II. RELATED APPEALS AND INTERFERENCES

Applicant is unaware of any related appeals and interferences.

III. STATUS OF CLAIMS AND SPECIFICATION

Claims 1-20 are pending in this application and have been rejected twice by the Examiner. It is from the multiple rejections of claims 1-20 that this Appeal is taken.

IV. STATUS OF AMENDMENTS

The claims have not been amended subsequent to the imposition of the Final Office Action dated 9-25-07. The current status of the claims is as presented in the original filing of the patent application dated 11-13-03.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Independent claim 1 is directed to a method for developing a script (see item 60 of FIG. 1 of Appellant's disclosure) to be used with speech recognition systems. The method comprises the steps of reading language phoneme data for a given language (see steps 105 and 110 of FIG. 3A), the language phoneme data having a plurality of phonemes occurring in the given language (see items 54, 65, 60 of FIG. 1). The method further comprises the steps of reading script data (see item 110 of FIG. 3A) having a set of one or more phonemes (see item 60 of FIG. 1) and counting each phoneme in the script data to produce a count data for each of the plurality of phonemes in the language phoneme data (see item 115 of FIG. 3A). The method further comprises the step of generating (see item 120 of FIG. 3A) a set of statistical data (see item 70 of FIG. 2) derived from the count data, the set of statistical data including one or more metrics of the extent to which the phonemes in the language phoneme data are included in the script data.

Independent claim 10 is directed to a machine readable storage having stored thereon a computer program for developing a script (see item 60 of FIG. 1) to be used with speech recognition systems. The computer program comprises a routine set of instructions for causing the machine to perform the step of reading language phoneme

data for a given language (see steps 105 and 110 of FIG. 3A), the language phoneme data having a plurality of phonemes occurring in the given language (see items 54, 65, 60 of FIG. 1). The computer program further includes instructions for causing the machine to perform the steps of reading script data (see item 110 of FIG. 3A) having a set of one or more phonemes (see item 60 of FIG. 1) and counting each phoneme in the script data to produce a count data for each of the plurality of phonemes in the language phoneme data (see item 115 of FIG. 3A). The computer program further includes instructions for causing the machine to perform the step of generating (see item 120 of FIG. 3A) a set of statistical data (see item 70 of FIG. 2) derived from the count data, the set of statistical data including one or more metrics of the extent to which the phonemes in the language phoneme data are included in the script data.

Independent claim 19 is directed to a script development tool (see item 50 of FIG. 1) for coupling to a script having a set of one or more phonemes (see item 60 of FIG. 1 of Appellant's disclosure) and programmed to both count (see item 115 of FIG. 3A) each phoneme in said script to produce (see item 115 of FIG. 3A) count data (see item 70 of FIG. 2) for each phoneme in a selected language, and also to generate (see item 120 of FIG. 3A) a set of statistical data (see item 70 of FIG. 2) derived from said count data, the set of statistical data comprising one or more metrics of the extent to which each phoneme in said selected language is included in said script.

VI. GROUNDS OF REJECTIONS TO BE REVIEWED ON APPEAL

1. Claims 1, 4-6, 10, 13-15, 19 have been rejected under 35 U.S.C. section 102(b) as being anticipated by Esquerra, "Design of a Phonetic Corpus for Speech Recognition in Catalan."("Esquerra" hereinafter).

2. Claims 2, 3, 7-8, 11-12, 16-17, 20 have been rejected under 35 U.S.C. section 103(a) as being unpatentable over Esquerra in view of Gould (U.S. Pat. No. 5,794,189) ("Gould" hereinafter).

3. Claims 9 and 18 have been rejected under 35 U.S.C. section 103(a) as being unpatentable over Esquerra in view of Dept. of Psychology, Univ. of Essex, "Phoneme Search"("Essex" hereinafter).

VII. THE ARGUMENT

1. THE REJECTION OF CLAIMS 1, 4-6, 10, 13-15, 19 UNDER 35 U.S.C. SECTION 102(B) AS BEING ANTICIPATED BY ESQUERRA

For the convenience of the Honorable board in addressing this rejection, claims 4-6 stand or falls together with claim 1 and claims 13-15 stand or fall together with claim 10.

In para. 4, p. 3 of the Final Office Action dated 9-25-07, the Examiner rejects claims 1, 4-6, 10, 13-15 and 19 under 35 U.S.C. section 102(b) as being anticipated by Esquerra.

Exemplary claim 1 recites as follows:

1. A method for developing a script to be used with speech recognition systems, said method comprising the steps of:

reading language phoneme data for a given language, the language phoneme data having a plurality of phonemes occurring in the given language;

reading script data having a set of one or more phonemes;

counting each phoneme in the script data to produce a count data for each of the plurality of phonemes in the language phoneme data;

generating a set of statistical data derived from the count data, the set of statistical data including one or more metrics of the extent to which the phonemes in the language phoneme data are included in the script data.

In para. 5 of p. 3 of the Final Rejection dated 9-25-07, the Examiner recites section 2 para. 1 and section 2.1 para. 1 of Esquerra in support of the notion that Esquerra discloses the claim limitation "reading language phoneme data for a given language, the language phoneme data having a plurality of phonemes." Section 2 para. 1 and section 2.1 para. 1 recite:

> "In order to know how often the phonetic units appear in Catalan, a frequency analysis was performed over a text corpus of 66000 words obtained mainly from an electronic newspaper on the Internet. Since the objective of this corpus is to analyze colloquial speech, opinion articles and interviews were mainly selected among all available texts. Hereinafter, the corpus is called reference corpus because the unit frequencies obtained from its analysis will be used later in the design of the phonetic corpus for recognition."
>
> "First of all, texts were processed to put abbreviations, numbers and other non-readable symbols in its orthographic form. Then, the corpus was converted into phonemes using a transcription program developed at UPC for a text-to-speech system [5]. A set of 37 phonetic symbols, including some allophonic variations and one special symbol for pauses, has been considered to represent the sounds of Catalan using SAMPA notation." (Emphasis added)

Thus, the Examiner has equated Esquerra's "reference corpus" with the claim limitation "language phoneme data." This is not a proper equation. Esquerra's "reference corpus" comprises text from a newspaper, interviews and articles and therefore constitutes a simple sample of a language. The claim limitation "language phoneme data," however, pertains to a language model (see item 54 of FIG. 2 of Appellant's disclosure) that may include a speech products vocabulary (see item 65 of FIG. 2) that defines the set of speech products or words that the language model uses (see para. 18 of Appellant's disclosure). A language model defines a probability of a sequence of words (such as a sentence) by means of a probability distribution. A speech products vocabulary provides a defined vocabulary for a language. Esquerra's "reference corpus," therefore, does not disclose the claim limitation "language phoneme data" of claims 1 and 10.

Next, in para. 5 p. 3 of the Final Office Action, the Examiner equates the "script data" claim limitation with the following text from section 3.1, para. 1 of Esquerra:

> "To generate the corpus of sentences, the following iterative method was used. From a large corpus of newspapers texts, sentences between 10 and 40 letters were selected, transcribed and sorted according to a phonetic probabilistic criteria [3].

Thus, the Examiner has equated Esquerra's "corpus of sentences" with the "script data" claim limitation of claims 1, 10 and the "script" claim limitation of claim 19. As can be seen in the citation above, Esquerra's "corpus of sentences" are derived

from seemingly the same source as Esquerra's "reference corpus" above, i.e., from newspapers, articles, etc. Thus, both Esquerra's "corpus of sentences" and Esquerra's "reference corpus" above constitute a simple sample of a language. In sum, the Examiner believes that two separate and distinct claim limitations, "language phoneme data" and "script data," mean the same thing – a sample of text. The Examiner cannot properly ascribe the same meaning to two separate and distinct claim limitations.

Next, in para. 5 p. 3 of the Final Office Action, the Examiner goes on to equate the "phonemes" claim limitation with the following text from section 3.1 para. 1 of Esquerra:

> The probabilistic measure can be expressed as . . . where N is the number of phones in a sentence, and freq i.r the phone frequency (in %) obtained from the reference corpus analysis.

Thus, the Examiner is effectively equating Esquerra's "phones" with the "phonemes" claim limitation of claims 1, 10 and 19. A recitation of definitions is in order. Merriam-Webster defines phoneme as:

> "any of the abstract units of the phonetic system of a language that correspond to a set of similar speech sounds (as the velar \k\ of cool and the palatal \k\ of keel) which are perceived to be a single distinctive sound in the language"

By comparison, Merriam Webster defines "phone" in the linguistic context as:

> a speech sound considered as a physical event without regard to its place in the sound system of a language

Of note, Wikipedia notes that a phoneme is "a set of phones that are cognitively equivalent (the "same" sound or element of sign)". Thus, the term phone and phoneme are not synonymous and the application of the term "phone" in Esquerra cannot be held to be the equivalent of a "phoneme" as recited in claims 1, 10 and 19.

The Examiner addresses the definition of a "phoneme" in para. 2 p. 2 of the Final Office Action wherein the Examiner states "phonemes are the symbolic description of individual sounds and phones are the physical description of the sounds." The Examiner's own statement supports the Appellant's assertion that a phone and a phoneme provide separate and distinct descriptions of a sound. The Examiner goes on to state that "each phone is linked to a phoneme," which is also consistent with the Appellant's assertion that, as defined by Wikipedia, a phoneme is a set of equivalent

phones. Again, the Examiner's own statement supports the Appellant's assertion regarding the definition of a phoneme and a phone.

Next, in para. 5 p. 3 of the Final Office Action, the Examiner goes on to equate the "phonemes" claim limitation with the following text from section 3.1 para. 1 of Esquerra:

> The most "interesting" sentences, i.e. those having the less frequent allophones, were retained and units were counted to know whether they reach the minimum number of required repetitions; otherwise more sentences were taken and the process was done again.

Thus, the Examiner is effectively equating Esquerra's "units" with the "phonemes" claim limitation. The Conclusion of Esquerra clearly provides that "units" are not phonemes, but phones including allophones and diphones. The text of the relevant portion of section 5, the Conclusion of Esquerra is reproduced for the convenience of the Examiner as follows, "As a first step, a text corpus was transcribed and segmented to count the number of occurrences for each type of unit (phones, allophones and diphones)." Wikipedia notes that a diphone is an adjacent pair of phones, while an allophone is one phone of many that belong to the same phoneme. Therefore, diphones and allophones are phones of a particular type and Appellant's argument provided above describes how a phone is not the same as a phoneme. Thus, the Esquerra term "unit" and the claim term "phoneme" are not synonymous and the application of the term "unit" in Esquerra cannot be held to be the equivalent of a "phoneme" as recited in claims 1, 10 and 19.

Therefore, Esquerra does not disclose the claimed limitations. Accordingly, the Examiner has failed to establish that the applied art teaches all of the claimed features. Thus, as it will be clear to the Honorable Board, Esquerra fails as a reference to anticipate the claimed invention. For the reasons stated above, Appellant respectfully requests that Honorable Board reverse this rejection of the claims.

Furthermore, the Appellant asserts that the Esquerra reference is not operable and therefore not enabling. "In determining that quantum of prior art disclosure which is necessary to declare an applicant's invention 'not novel' . . . the stated test is whether a reference contains an 'enabling disclosure'... ." *In re Hoeksema*, 399 F.2d 269, 158 USPQ 596 (CCPA 1968). The disclosure in an assertedly anticipating reference must

provide an enabling disclosure of the desired subject matter; mere naming or description of the subject matter is insufficient, if it cannot be produced without undue experimentation. *Elan Pharm., Inc. v. Mayo Found. For Med. Educ. & Research*, 346 F.3d 1051, 1054, 68 USPQ2d 1373, 1376 (Fed. Cir. 2003) (At issue was whether a prior art reference enabled one of ordinary skill in the art to produce Elan's claimed transgenic mouse without undue experimentation. Without a disclosure enabling one skilled in the art to produce a transgenic mouse without undue experimentation, the reference would not be applicable as prior art.). A reference contains an "enabling disclosure" if the public was in possession of the claimed invention before the date of invention. "Such possession is effected if one of ordinary skill in the art could have combined the publication's description of the invention with his [or her] own knowledge to make the claimed invention." *In re Donohue*, 766 F.2d 531, 226 USPQ 619 (Fed. Cir. 1985).

A review of the Esquerra reference reveals that the reference does not disclose any description of a basic computer architecture necessary to enable such a system in the real world. The MSF reference is simply an academic paper that should be accorded the weight of such a document. The reference makes no mention of the basic computer building blocks that would be necessary to build the systems described by the reference by a person of ordinary skill in the art. More specifically, the Esquerra reference makes no mention of any computer, processor, memory or communications bus – the basic building blocks of a computer system, which is described in detail in Appellant's disclosure. There can be no enabling disclosure of a computer system when none of the basic building blocks of a computer system are disclosed in the disclosure.

In short, the Esquerra reference is a general description of a speech processing approach, but the reference does not describe a computer system with enough specificity to be an "enabling disclosure." For this reason, the Esquerra reference is not an appropriate prior art reference and for the additional reasons stated above, Appellant respectfully requests that Honorable Board reverse this rejection of the claims.

2. THE REJECTION OF CLAIMS 2, 3, 7-8, 11-12, 16-17, 20 UNDER 35 U.S.C. SECTION 103(A) AS BEING UNPATENTABLE OVER ESQUERRA IN VIEW OF GOULD

For the convenience of the Honorable board in addressing this rejection, claims 2, 3, 7-8 stand or fall together and claims 11-12, 16-17 stand or fall together.

On p. 8, para. 15 of the Final Office Action dated 9-25-07, the Examiner rejected claims 2, 3, 7-8, 11-12, 16-17, 20 under 35 U.S.C. section 103(e) as being unpatentable over Esquerra in view of Gould. Claims 2, 3, 7-8, 11-12, 16-17, 20 are dependant claims and therefore include the limitations of independent claims 1, 10 and 19, respectively. For this reason, and for the reasons provided above for the 35 U.S.C. section 102(b) rejection, Esquerra does not disclose the claimed limitations of claims 2, 3, 7-8, 11-12, 16-17, 20 either alone or in combination with Gould.

Accordingly, the Examiner has failed to establish that the applied art teaches all of the claimed features of claims 2, 3, 7-8, 11-12, 16-17, 20. Thus, as it will be clear to the Honorable Board, Esquerra and Gould fail as references to render the claimed invention unpatentable. For the reasons stated above, Appellant respectfully requests that Honorable Board reverse this rejection of the claims.

3. THE REJECTION OF CLAIMS 9 AND 18 UNDER 35 U.S.C. SECTION 103(A) AS BEING UNPATENTABLE OVER ESQUERRA IN VIEW OF ESSEX

On p. 18, para. 25 of the Final Office Action dated 9-25-07, the Examiner rejected claims 9 and 18 under 35 U.S.C. section 103(e) as being unpatentable over Esquerra in view of Essex. Claims 9 and 18 are a dependant claims and therefore includes the limitations of independent claims 1 and 10, respectively. For this reason, and for the reasons provided above for the 35 U.S.C. section 102(b) rejection, Esquerra does not disclose the claimed limitations of claims 9 and 18 either alone or in combination with Essex.

Accordingly, the Examiner has failed to establish that the applied art teaches all of the claimed features of claims 9 and 18. Thus, as it will be clear to the Honorable Board, Esquerra and Essex fail as references to render the claimed invention

unpatentable. For the reasons stated above, Appellant respectfully requests that Honorable Board reverse this rejection of the claims.

VIII. CONCLUSION

Based upon the foregoing, Appellants respectfully submit that the Examiner's rejections under 35 U.S.C. section 102(b) and 103(a) at least fail for the deficiencies of the Esquerra reference. Appellants therefore solicit the Honorable Board to reverse the Examiner's rejections under 35 U.S.C. sections 102(b) and 103(a).

To the extent necessary, a petition for extension of time under 37 C.F.R. section 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper including extension of time fees to Deposit Account 50-3829, and please credit excess fees to such deposit account.

Date: Feb. 26, 2008

Respectfully submitted,

/Mark Terry/

Mark Terry
Attorney Registration No. 47,133
Customer # 46322
Carey Rodriguez Greenberg & Paul LLP
950 Peninsula Corporate Circle, Suite 3020
Boca Raton, FL 33487
Tel: 561-922-3845
Fax: 561-244-1062

IX. CLAIMS APPENDIX

1. A method for developing a script to be used with speech recognition systems, said method comprising the steps of:

reading language phoneme data for a given language, the language phoneme data having a plurality of phonemes occurring in the given language;

reading script data having a set of one or more phonemes;

counting each phoneme in the script data to produce a count data for each of the plurality of phonemes in the language phoneme data;

generating a set of statistical data derived from the count data, the set of statistical data including one or more metrics of the extent to which the phonemes in the language phoneme data are included in the script data.

2. The method of claim 1, wherein the script data includes one or more words, each word having one or more of the set of one or more phonemes, and further comprising:

reading vocabulary data having one or more words;

comparing each word in the script data with the vocabulary data; and

returning an error message if a word in the script data is not included in the vocabulary data.

3. The method of claim 2, wherein the step of counting each phoneme in the script data to produce a count data for each of the plurality of phonemes in the language phoneme data includes the steps of:

comparing each word in the script data with the vocabulary data;

returning an error message if a word in the script data is not included in the vocabulary data; and

counting each phoneme in each word in the script data if a word in the script data is included in the vocabulary data.

4. The method of claim 1, wherein the set of statistical data includes:

an occurrence data for each of the phonemes in the phoneme data, each occurrence data indicating a number of occurrences of the phoneme in the script data.

5. The method of claim 1, wherein the set of statistical data includes:

a ratio data, each ratio data being the number of phonemes in the script data as a percentage of the number of the plurality of phonemes in the phoneme data.

6. The method of claim 1, wherein the set of statistical data includes:

a missing phoneme data, each missing phoneme data being a list of the phonemes in the language phoneme data not included in the script data.

7. The method of claim 1, wherein the script data includes one or more words, and further comprising the steps of:

reading a vocabulary data having one or more words;

reading an additional word having one or more phonemes;

comparing the additional word with the vocabulary data;

adding the additional word to the script data if the additional word is included in the vocabulary data.

8. The method of claim 1, wherein the script data includes one or more words, and further comprising the steps of:

reading a vocabulary data having one or more words;

reading an additional word having one or more phonemes;

comparing the additional word with the script data;

removing the additional word from the script data if the additional word is included in the script data.

9. The method of claim 1, wherein the script data includes one or more words, and further comprising the steps of:

reading a vocabulary data having one or more words;

reading a set of one or more desired phonemes;

searching the vocabulary data for one or more words having the set of one or more desired phonemes;

generating a report of one or more additional words having the set of one or more desired phonemes, if the one or more additional words having the set of one or more desired phonemes are included in the vocabulary data.

10. A machine readable storage having stored thereon a computer program for developing a script to be used with speech recognition systems, said computer program comprising a routine set of instructions for causing the machine to perform the steps of:

reading a language phoneme data for a given language, the language phoneme data having a plurality of phonemes occurring in the given language;

reading a script data having a set of one or more phonemes;

counting each phoneme in the script data to produce a count data for each of the plurality of phonemes in the language phoneme data;

generating a set of statistical data derived from the count data, the set of statistical data including one or more metrics of the extent to which the phonemes in the language phoneme data are included in the script data.

11. The machine readable storage of claim 10, wherein the script data includes one or more words, each word having one or more of the set of one or more phonemes, and for further causing said machine to perform the steps of:

reading a vocabulary data having one or more words;

comparing each word in the script data with the vocabulary data; and

returning an error message if a word in the script data is not included in the vocabulary data.

12. The machine readable storage of claim 11, wherein the step of counting each phoneme in the script data to produce a count data for each of the plurality of phonemes in the language phoneme data includes the steps of:

comparing each word in the script data with the vocabulary data;

returning an error message if a word in the script data is not included in the vocabulary data; and

counting each phoneme in each word in the script data if a word in the script data is included in the vocabulary data.

13. The machine readable storage of claim 10, wherein the set of statistical data includes:

an occurrence data for each of the phonemes in the phoneme data, each occurrence data indicating a number of occurrences of the phoneme in the script data.

14. The machine readable storage of claim 10, wherein the set of statistical data includes:

a ratio data, each ratio data being the number of phonemes in the script data as a percentage of the number of the plurality of phonemes in the phoneme data.

15. The machine readable storage of claim 10, wherein the set of statistical data includes:

a missing phoneme data, each missing phoneme data being a list of the phonemes in the language phoneme data not included in the script data.

16. The machine readable storage of claim 10, wherein the script data includes one or more words, and further causing the machine to perform the steps of:

reading a vocabulary data having one or more words; reading an additional word having one or more phonemes;

comparing the additional word with the vocabulary data;

adding the additional word to the script data if the additional word is included in the vocabulary data.

17. The machine readable storage of claim 10, wherein the script data includes one or more words, and further causing the machine to perform the steps of:

reading a vocabulary data having one or more words;

reading an additional word having one or more phonemes;

comparing the additional word with the script data;

removing the additional word from the script data if the additional word is included in the script data.

18. The machine readable storage of claim 10, wherein the script data includes one or more words, and further causing the machine to perform the steps of:

reading a vocabulary data having one or more words;

reading a set of one or more desired phonemes;

searching the vocabulary data for one or more words having the set of one or more desired phonemes;

generating a report of one or more additional words having the set of one or more desired phonemes, if the one or more additional words having the set of one or more desired phonemes are included in the vocabulary data.

19. A script development tool configured for coupling to a script having a set of one or more phonemes and programmed to both count each phoneme in said script to produce count data for each phoneme in a selected language, and also to generate a set of statistical data derived from said count data, the set of statistical data comprising one or more metrics of the extent to which each phoneme in said selected language is included in said script.

20. The tool of claim 19, wherein the script includes one or more words, and wherein the tool is further programmed to read a vocabulary data having one or more words, and to read an additional word having one or more phonemes, and is also programmed to compare the additional word with the vocabulary data and add the additional word to the script data if the additional word is included in the vocabulary data, and is also programmed to compare the additional word with the script and remove the additional word from the script data if the additional word is included in the script data.

X. EVIDENCE APPENDIX

No evidence submitted pursuant to 37 C.F.R. sections 1.130, 1.131 or 1.132 of this title of any other evidence entered by the Examiner has been relied upon by Appellant in this Appeal, and thus no evidence is attached hereto.

XI. RELATED PROCEEDINGS INDEX

Since Appellant is unaware of any related appeals and interferences, no decision rendered by a court of the Board is attached hereto.